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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/945,002	08/31/2001	Paul W. Dent	4015-980	1823
24112	7590	05/10/2005	EXAMINER	
COATS & BENNETT, PLLC			BURD, KEVIN MICHAEL	
P O BOX 5			ART UNIT	
RALEIGH, NC 27602			PAPER NUMBER	
			2631	

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/945,002

Applicant(s)

DENT, PAUL W.

Examiner

Kevin M. Burd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,10-17,19,27-32 and 39-41 is/are rejected.
- 7) ☒ Claim(s) 3-9,18,20-26,33 and 35-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/01;12/03;12/04</u> . | 6) <input type="checkbox"/> Other: _____  |

***Information Disclosure Statement***

1. The information disclosure statements (IDS) submitted on 12/18/2001; 12/8/2003; 12/10/2004 and 4/25/2005 are being considered by the examiner.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 13-17, 19, 27, 31 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Karlsson (US 6,810,073).

Regarding claims 1, 14 and 31, Karlsson discloses a method of processing received signals using the receiver shown in figure 2. The receiver receives signals containing transmissions from a plurality of mobile terminals (column 4, lines 58-67). Transmitting signals from a plurality of mobile terminals to a base station is shown in figure 1. The combined signals are despread to recover specific user signals (abstract). The channel estimates for each channel is determined and interference cancellation takes place (column 5, lines 46-55). Filter coefficients are computed based on the

channel estimates and the interference cancellation to further remove the interference (column 9, lines 33-47).

Regarding claims 2, 15-17, 19, 27, 32 and 34, as stated above, the filter coefficients are updated to further reduce interference. The channel estimates and the interference calculations allow the system to remove interference. This is the interference matrix A.

Regarding claim 13, channel estimates are determined for each user to account for variations of the radio channels (column 5, lines 46-55).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10-12, 28-30 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karlsson (US 6,810,073) in view of Hui et al (US 6,590,932).

Regarding claims 10-12, 28-30 and 39-41, Karlsson discloses the method of processing received signals in a receiver as stated above in paragraph 2. Karlsson does not disclose the receiver comprises an equalizer to compensate for the interference between the symbols, the equalizer using a maximum likelihood Sequence Estimator (MLSE) and a noise-whitening filter ahead of said equalizer. Hui discloses, in figure 2, a noise-whitening filter 220 for filtering a received signal and outputting a signal to

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equalizer 230, where the equalizer is an MLSE equalizer (column 3, lines 52-55). This whitening filter and equalizer configuration reduces the average signal disturbance by whitening the signal disturbance (column 4, lines 8-12). This eliminates the interference and allows the originally transmitted signal to be recovered in the receiver. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Hui into the receiver of Karlsson.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd  
5/8/2005

**KEVIN BURD**  
**PRIMARY EXAMINER**